UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER
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ART UNIT	PAPER NUMBER
2619	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

	Application No.	Applicant(s)
Office Action Summary	10/780,357	GU ET AL.
	Examiner	**Art Unit**	
	Andrew C. Lee	2619	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>17 February 2004</u>.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>1-20</u> is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) <u>18 and 19</u> is/are allowed.

6)☒ Claim(s) <u>1-7,11-17,20</u> is/are rejected.

7)☒ Claim(s) <u>8-10</u> is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All   b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>2/17/2004</u>.

4)☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ .

5)☐ Notice of Informal Patent Application

6)☐ Other: _____ .

DETAILED ACTION

1.   This Office Action is in response to the Application 10780357 filed on 02/17/2004.

Claims 1 – 20 are hence entered and presented for examination.

Information Disclosure Statement

2.   The information disclosure statement (IDS) submitted on 02/17/2004 was filed, and

the submission is in compliance with the provisions of 37 CFR 1.97. Accordingly, the

information disclosure statement is being considered by the examiner.

Specification

3.   The lengthy specification has not been checked to the extent necessary to determine

the presence of all possible minor errors. Applicant's cooperation is requested in correcting

any errors of which applicant may become aware in the specification.

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the presence of all possible minor errors. Applicant's cooperation is requested in correcting

any errors of which applicant may become aware in the specification.

Claim Objections

4.   Claim 11 is objected to because of the following informalities:

Regarding claim 11, the term E_f (t) is not defined. The term should be indicated and

defined clearly in the claim if it is the claimed subject matter.

Appropriate correction is required.

5.   Claim 18 is objected to because of the following informalities:

Regarding claim 18, the phrase "configured to", in lines 4, 6, 10, respectively is not a

positive recitation.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6.   Claim 12 recites the limitation "the number of time units" in line 3, and in line 5. There

is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7.   Claims 1 – 6, 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Giaimo et al. (US 20040090924 A1) in view of Kola et al. (US 20040064467 A1).

Regarding claims 1, 20, Giaimo et al. disclose a method, a system for scheduling a

plurality of series of packets for transmission between a plurality of terminals in a single

wireless channel of a packet-switched local area network (Fig. 5, page 5, paragraph [0048]),

comprising: assigning a transmission rate to each of a plurality of terminals ("three different

wireless channels X, Y, and Z for transmitting different types of data at different data rates",

Fig. 4, Page 5, paragraphs [0046], [0048], page 6, paragraph [0050]); and Giaimo et al. also

disclose scheduling the series of packets for transmission between the terminals (Fig. 9,

page 10, paragraphs [0077], [0078]).

However, Giaimo et al. do not disclose explicitly scheduling the series of packets for

transmission between the terminals such that each terminal receives a substantially equal

amount of transmission time over an extended period of time.

Kola et al. teach scheduling the series of packets for transmission between the

terminals such that each terminal receives a substantially equal amount of transmission time

over an extended period of time (page 2, paragraph [0016]).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the

invention was made to modify the teachings of Giaimo et al. to include the features of

scheduling the series of packets for transmission between the terminals such that each

terminal receives a substantially equal amount of transmission time over an extended period

of time as taught by Kola et al. in order to provide a method for scheduling of packet data

and to a correspondingly adapted packet data scheduler (as suggested by Kola et al., see

page 1, paragraph [0001]).

Regarding claim 2, Giaimo et al. disclose the method claimed in which the local area

network operate in an ad hoc mode ("ad hoc mode", Fig. 1B, page 3, paragraph [0017]).

Regarding claim 3, Giaimo et al. disclose the method claimed in which the local area network operates is in an infrastructure mode ("infrastructure mode", Fig. 1B, page 3, paragraph [0017]).

Regarding claim 4, Giaimo et al. disclose the method claimed further comprising: assigning different transmission rates to the plurality of terminals such that at least one terminal is transmitting at a different rate than all other terminals ("three different wireless channels X, Y, and Z for transmitting different types of data at different data rates", Fig. 4, page 5, paragraph [0046]).

Regarding claim 5, Giaimo et al. disclose the method claimed in which some of the plurality of terminals are mobile ("laptop", Fig. 5, page 5, paragraph [0048]).

Regarding claim 6, Giaimo et al. disclose the method claimed in which the assigned transmission rate is dependent on a quality of the channel ("different QOS link properties can be employed for communicating different type of data packets..."page 3, paragraph [0019]).

8.   Claims 7, 11 – 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Giaimo et al. (US 20040090924 A1) and Kola et al. (US 20040064467 A1) as applied to claims 1 – 6, 20 above, and further in view of Bharghavan et al. (US 6728257 B1).

Regarding claim 7, Giaimo et al. disclose a method, a system for scheduling a plurality of series of packets for transmission between a plurality of terminals in a single wireless channel of a packet-switched local area network (Fig. 5, page 5, paragraph [0048]), comprising: assigning a transmission rate to each of a plurality of terminals (Page 5, paragraph [0048], page 6, paragraph [0050]);

Giaimo et al. and Kola et al. do not disclose explicitly the method claimed in which a particular terminal transmitting via an error-free channels is assigned a higher transmission rate than another terminal transmitting via an error-prone channel.

Bharghavan et al. teach the method claimed in which a particular terminal transmitting via an error-free channels is assigned a higher transmission rate than another terminal transmitting via an error-prone channel (column 7, lines 20 – 25, column 8, lines 58 – 67).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Giaimo et al. and Kola et al. to include the features of claimed in which a particular terminal transmitting via an error-free channels is assigned a higher transmission rate than another terminal transmitting via an error-prone channel as taught by Bharghavan et al. in order to provide channel scheduling among contending hosts in such base and host wireless shared channel packet communication networks (as suggested by Bharghavan et al., see column 1, lines 11 – 13).

Regarding claim 11 Giaimo et al. and Kola et al. do not disclose explicitly the method of claimed further comprising: associating a credit counter with each series of packets *f*

such that when $E_f(t) > 0$ the series of packets is leading, and when $E_f(t) < 0$ the series of packets is lagging, where t is a time unit.

Bharghavan et al. teach the method of claimed further comprising: associating a credit counter with each series of packets f such that when $E_f(t) > 0$ the series of packets is leading, and when $E_f(t) < 0$ the series of packets is lagging, where t is a time unit (column 3, lines 42 – 43, column 15, lines 36 – 47).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Giaimo et al. and Kola et al. to include the features of the method of claimed further comprising: associating a credit counter with each series of packets f such that when $E_f(t) > 0$ the series of packets is leading, and when $E_f(t) < 0$ the series of packets is lagging, where t is a time unit as taught by Bharghavan et al. in order to provide channel scheduling among contending hosts in such base and host wireless shared channel packet communication networks (as suggested by Bharghavan et al., see column 1, lines 11 – 13).

Regarding claim 12, Giaimo et al. and Kola et al. do not disclose explicitly the method of claimed further comprising: increment the credit counter for a particular leading series of packets by the number of time units relinquished by a particular lagging series of packets while decrementing the credit counter of the particular lagging series of packets by the number of time units.

Bharghavan et al. teach the method claimed further comprising: increment the credit counter for a particular leading series of packets by the number of time units relinquished by a particular lagging series of packets while decrementing the credit counter of the particular lagging series of packets by the number of time units (column 15, lines 36 – 47).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Giaimo et al. and Kola et al. to include the features of method claimed further comprising: increment the credit counter for a particular leading series of packets by the number of time units relinquished by a particular lagging series of packets while decrementing the credit counter of the particular lagging series of packets by the number of time units as taught by Bharghavan et al. in order to provide channel scheduling among contending hosts in such base and host wireless shared channel packet communication networks (as suggested by Bharghavan et al., see column 1, lines 11 – 13).

Regarding claim 13, Giaimo et al. and Kola et al. do not disclose explicitly the method of claimed in which the time units are expressed in terms of transmitted bytes, normalized with respect to the transmission rate.

Bharghavan et al. teach method of claimed in which the time units are expressed in terms of transmitted bytes, normalized with respect to the transmission rate (column 5, lines 26 – 44).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Giaimo et al. and Kola et al. to include the

features of method claimed in which the time units are expressed in terms of transmitted

bytes, normalized with respect to the transmission rate as taught by Bharghavan et al. in

order to provide channel scheduling among contending hosts in such base and host wireless

shared channel packet communication networks (as suggested by Bharghavan et al., see

column 1, lines 11 – 13).

Regarding claim 14, Giaimo et al. and Kola et al. do not disclose explicitly the method

of claimed further comprising: relinquishing time units from a selected leading series of

packets having a maximum credit counter to lagging series of packets.

Bharghavan et al. teach explicitly the method claimed further comprising:

relinquishing time units from a selected leading series of packets having a maximum credit

counter to lagging series of packets (column 5, lines 36 – 44).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the

invention was made to modify the teachings of Giaimo et al. and Kola et al. to include the

features of the method claimed further comprising: relinquishing time units from a selected

leading series of packets having a maximum credit counter to lagging series of packets as

taught by Bharghavan et al. in order to provide channel scheduling among contending hosts

in such base and host wireless shared channel packet communication networks (as

suggested by Bharghavan et al., see column 1, lines 11 – 13).

Regarding claim 15, Giaimo et al. and Kola et al. do not disclose explicitly the method claimed in which the time units are relinquished to the lagging series of packets proportional to normalized credit counters of the lagging series of packets.

Bharghavan et al. teach the method claimed in which the time units are relinquished to the lagging series of packets proportional to normalized credit counters of the lagging series of packets (column 5, lines 26 – 35, column 15, lines 36 – 47).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Giaimo et al. and Kola et al. to include the features of the method claimed in which the time units are relinquished to the lagging series of packets proportional to normalized credit counters of the lagging series of packets as taught by Bharghavan et al. in order to provide channel scheduling among contending hosts in such base and host wireless shared channel packet communication networks (as suggested by Bharghavan et al., see column 1, lines 11 – 13).

Regarding claim 16, Giaimo et al. and Kola et al. do not disclose explicitly the method claimed further comprising: estimating a state of the channel in each terminal to determine whether the terminal schedules packets for transmission.

Bharghavan et al. teach the method claimed further comprising: estimating a state of the channel in each terminal to determine whether the terminal schedules packets for transmission (column 15, lines 48 – 50).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Giaimo et al. and Kola et al. to include the

features of the method claimed further comprising: estimating a state of the channel in each

terminal to determine whether the terminal schedules packets for transmission as taught by

Bharghavan et al. in order to provide channel scheduling among contending hosts in such

base and host wireless shared channel packet communication networks (as suggested by

Bharghavan et al., see column 1, lines 11 – 13).

9.   Claims 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Giaimo et

al. (US 20040090924 A1), Kola et al. (US 20040064467 A1) and Bharghavan et al. (US

6728257 B1) as applied to claims 1 – 6, 7, 11 – 16, 20 above, and further in view of Meier et

al. (US US 20050018624 A1, prior art).

Regarding claim 17, Giaimo et al. disclose the limitation of IEEE 802.11 standard

(abstract).

Giaimo et al., Kola et al. and Bharghavan et al. do not disclose explicitly the method

claimed in which scheduling mechanism is implemented with a hybrid coordinator according

to an IEEE 802.11 e standard.

Meier et al. teach the method claimed in which scheduling mechanism is

implemented with a hybrid coordinator according to an IEEE 802.11e standard (page 1,

paragraph [0007]).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the

invention was made to modify the teachings of Giaimo et al. and Kola et al. and Bharghavan

et al. to include the features of the method claimed in which scheduling mechanism is

implemented with a hybrid coordinator according to an IEEE 802.11e standard as taught by

Meier et al. in order to provide an efficient power-save method suitable for QoS applications

(as suggested by Meier et al., see page 1, paragraph [0017]).

Allowable Subject Matter

10.   Claim 18 is allowed.

The following is an examiner's statement of reasons for allowance:

The prior art made of record, in single or in combination, fails to disclose explicitly the

limitation of: "an error-free service model configured to define ideal packet flows

that transmit at different rates over an error-free channel; a lead and lag model configured to

determine leading packet flows and lagging packet flows, and to determine amounts of

leading and amounts of lagging for the leading packet flows and the lagging packet flows,

respectively; and a compensation model configured to compensate the lagging packet

flows at an expense of the leading packet flows" as disclosed in claim 18.;

11.   Additionally, all of the further limitations in claim 19 are allowable since the claim is

dependent upon the independent claim.

12.   Claims 8, 9, 10 are objected to as being dependent upon a rejected base claim, but

would be allowable if rewritten in independent form including all of the limitations of the base

claim and any intervening claims.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

13.   The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

a) Whitehill et al. (US 6937602 B2) disclose system and method for providing a congestion optimized address resolution protocol for wireless ad-hoc networks.

b) Hasty, Jr. et al. (US 6728232 B2) disclose system and method for auto-configuration and discovery of IP to MAC address mapping and gateway presence in wireless peer-to-peer ad-hoc routing networks.

c) Chwieseni et al. (US 69704444 B2) disclose system and method for self propagating information in ad-hoc peer-to-peer networks.

14.   Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andrew C. Lee whose telephone number is (571) 272-3131. The examiner can normally be reached on Monday through Friday from 8:30am - 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edan Orgad can be reached on (571) 272-7884. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Andrew C. Lee/::<10/24/2007>

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